

ISD News and Views

Volume 8 No. 10

STATE DOCUMENTS COLLECTION

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Commentary

We thank our readers for your views and comments. We are beginning to incorporate your ideas and look forward to hearing more from you (call Sherry Hanks at 444-2700).

Other than the slight delay in publication of this issue, the publication schedule that appeared in last month's issue is unchanged.

Term Contract Status

Microcomputer Term Contract

Pending the new microcomputer term contract award, IBM has agreed to extend its microcomputer equipment term contract until April 1, 1991. This extension means that the following microcomputer term contracts will be in place through the end of March, 1991:

- TC 228-B Microcomputer Equipment (Zenith)
- TC 229-B Microcomputer Equipment (ISC)
- TC 250-B IBM Microcomputer Equipment and Maintenance

Renewals of the two printer term contracts (TC 230-B, Okidata Printers and Supplies, with ComputerLand and TC 234-B, Hewlett-Packard Printers and Accessories, with Oregon Digital Computer) are underway.

Telecommunications

METNET - Distance Learning Technology

METNET stands for the Montana Educational Telecommunications NETWORK. It is a statewide, educational system that the Office of Public Instruction, the Office of the Commissioner of Higher Education and the Department of Administration are developing cooperatively. Through METNET, Montanans will be able to teach, learn, and share educational resources and opportunities--ideally, from anywhere in the state.

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PLEASE RETURN

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METNET embodies the intent of the legislature to distribute educational opportunities for Montanans equitably. This project carries forward the successful cooperative efforts begun through a telecommunications task force that the 1987 Legislature established under House Joint Resolution 58. The 1989 Legislature addressed the issue of school equalization with House Bill 28. An important part of that bill funded the Department of Administration, in cooperation with the Office of Public Instruction and the Office of the Commissioner of Higher Education, to conduct two tasks:

A needs assessment to design a system that would use Distance Learning Technology to give all Montana schools and other organizations access to improved educational resources;

The implementation of a system based on the results of that needs assessment.

House Bill 30, currently being reviewed in the legislature, proposes funding to continue implementing METNET through the next biennium, while providing additional monies for training and staff.

Virtually all types of telecommunication technologies and resources in Montana are used in the proposed approach. In the first phase of METNET, the emphasis is to provide hardware for both computer aided and satellite delivered instruction.

A personal computer equipped with a modem is capable of two-way, interactive communication and of accessing myriad national data bases and bulletin boards. Montana educators are using computer-based data links creatively to provide learning opportunities never before available in Montana. At least four educational network applications for PC's are now in use in Montana using the existing telephone infrastructure—Big Sky Telegraph, EDUNET, Goliath, and the Young Scholars Program.

Satellite receive dishes let all schools participate in satellite delivered one-way video instruction. The existing telephone systems provide a return path for two-way audio interaction between the

student and the distant teacher. Educational programming via satellite is becoming increasingly available, while existing telecommunications infrastructures are being upgraded throughout Montana to digital facilities or fiber optic service.

Concurrent with developments in telecommunications transmission systems, advances in video compression technology are making two-way video transmission more cost effective. As the implementation of the basic network continues, two-way compressed video will be introduced at various locations throughout the state to increase the value and the versatility of the learning experience. Watch for more on this aspect of METNET in later issues of *News & Views*.

--Alan J. Ludwig

Mainframe

SDSF and System Utilization

SDSF is a TSO product that lets mainframe users track and control the progress of their jobs through the system and view and control the disposition of output produced by these jobs. The top or "title line" of the SDSF DISPLAY ACTIVE panel displays two fields that have caused concern among some of our mainframe users. (Users access the DISPLAY ACTIVE panel by entering S.DA from the ISPF primary option menu.) One field, CPU, displays the CPU busy percentage. The other field, PAGING, displays the system paging rate.

Often, the values displayed in these fields are quite high. A CPU busy percentage of 90% or even 100% is not unusual. Although the PAGING rate shown is usually quite low (less than 15), it can exceed 200. These high numbers lead users to wonder whether the mainframe has enough capacity. Users may complain (to themselves, at least), "No wonder my job is taking so long to execute. The CPU is too busy." What's the story here?

The CPU and PAGING information contained in the SDSF DISPLAY ACTIVE panel are interesting, but very poor indicators of system
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usage, storage utilization (paging), I/O load (SIO field), or mainframe capacity. The Technical Services Section is responsible for tracking mainframe resource usage (CPU, memory, I/O) and for mainframe capacity planning. They have several of the products that are designed specifically to give accurate information for tracking current utilization and providing historical trend data. SDSF is not one of these products.

To give you a feel for the current mainframe usage, here are some January mainframe utilization figures for the prime shift (9am - 12pm and 1pm - 4pm):

1. The CPU utilization averaged 73.9%. At no point during the month was the CPU utilization at or above 95% for 5% of prime shift (15 minutes).
2. The overall system paging rate averaged 12 pages/second. Our 3090-200E CPU can effectively handle a paging rate in excess of 350 pages/second. Thus, the memory resource on the mainframe is not a problem.
3. The average overall I/O rate was 412 I/Os per second, which is well within the capacity of a 3090-200E.

In addition, all of the DASD I/O on the mainframe passes through one of two control units, each of which has 32 megabytes of cache memory. These controllers are intelligent processors in their own right. They "anticipate" the data that the host will require next and read it into the cache memory from the disk volume before the mainframe even requests it. If the controller "guesses" correctly, the data needed is already in its memory and can be transferred to the host at channel speed. It is not unusual for the controller to guess correctly more than 80% of the time for the majority of disk volumes. This control unit function greatly improves DASD response time and increases the overall capacity of the I/O subsystem.

If this type of information is interesting to you, let us know and we'll try to include more articles on mainframe topics of this nature. If you

have a question or an idea for an article, call ISD's Technical Services and we'll see what we can do.

--Joe Beausoleil

STEPLIBS for SYS1.COMPLIB

Users often put the dataset **SYS1.COMPLIB** in the STEPLIB DD statement, either by itself or in concatenations. This practice is unnecessary and should be discontinued because it can cause you problems.

During the implementation of a new release of software on the mainframe, the old release could be picked up if this STEPLIB to SYS1.COMPLIB is used. In some cases, you might even pick up a mixture of two different releases of software. The Technical Services Section has mechanisms and procedures to ensure the proper release of a software product is used. By using a STEPLIB to SYS1.COMPLIB, users circumvent this and create problems for themselves.

--Robin Anlian

Microcomputer

Focus on IBM 8513 Monitors

IBM is replacing, free of charge, certain 8513 computer monitors (displays) that gradually lose their ability to focus. The failure is related to the amount of time the monitor is used. The problem is a design flaw; a bleeder resistor fails over time because of heat buildup. This problem was corrected by the end of 1988.

IBM will warrant 8513 monitors for four (4) years from the date of purchase for this particular flaw. If your monitor is failing, make sure that you request service within the 4 year time frame so that you are not charged for the service call.

This replacement program is only intended to cover 8513 displays that will not focus properly. Monitors with serial numbers ranging from 72-0000000 through 72-064000 are affected. Anyone who cannot properly focus the display and
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whose monitor is in this serial range--and was purchased within the 4 year time frame--may arrange for a free replacement by contacting IBM Service at 1-800-426-7378.

End Notes

The Passing of an Era

The beginning of 1991 saw the end of an era in Montana State computing. Remember when we used decks of cards to run computers instead of to play games? (Or was it along with? It's so long ago, we can't remember.) Key entry from a workstation (intelligent or dumb) has now completely replaced punching cards and reading them into computer memory. Toward the end of January, the last of the punch card machines and card readers were removed from the state's mainframe computer system in the Mitchell Building and taken to surplus property.
--Sherry Hanks

Training

Class Registration--Even Faster

We are happy to learn that you want to attend ISD's classes, however you get the word to us. **However**, when you deadhead your enrollment form to "ISD" or to the **News & Views** editor, it goes to ISD's Administrative Office two floors above the Help Desk and gets dead-headed back down. For faster service, send your enrollment forms to "ISD Help Desk."

ISD offers several very popular classes. To ensure your participation in a class, call 444-2973 to pre-register. Completed enrollment forms must be sent to the ISD Help Desk, even if you have pre-registered. Participants will begin receiving letters confirming their class attendance about 1 1/2 weeks before the class begins.

Training Information

All classes will be held in the basement of the Teachers Retirement Building at 1500 6th Ave. unless another location is specified. There is a limit of 12 participants per paid class and 20 participants per demonstration class, unless otherwise announced.

The cost of the classes is as follows:

<u>Class Name</u>	<u>Subscriber</u>	<u>Non-Subscriber</u>	<u>Length in Days</u>
Orientation to the State Computer Center	FREE	FREE	¼
Introduction to TSO/SPF	\$ 50.00	\$ 50.00	1
*Personal Services/PC	30.00	30.00	½
*Personal Manager (PM)	30.00	30.00	½
Introduction to JCL	200.00	200.00	4
Introduction to Culprit	150.00	150.00	3
Subscribing in Culprit	FREE	FREE	¼
Culprit Programming for IDMS	100.00	100.00	2
*Using COMPAREX	30.00	30.00	½
*Using Novell Network	30.00	40.00	½
*Introduction to SAS: Module 1	25.00	25.00	¼
Module 2	25.00	25.00	¼
Module 3	125.00	125.00	2½
Module 4	25.00	25.00	½
Module 5	25.00	25.00	½
Beginning Microcomputer Skills	50.00	70.00	1
Fundamentals of DOS	50.00	70.00	1
*Intermediate DOS	50.00	70.00	1
*Conversion from WordPerfect 5.0 to 5.1	30.00	40.00	½
Introduction to WordPerfect (5.0 or 5.1)	75.00	105.00	1½
Advanced Features of WordPerfect (5.0 or 5.1)	75.00	105.00	1½
WordPerfect Complex Document Design	FREE	FREE	¼
*Conversion from Lotus 2.01 to 3.0	30.00	40.00	½
*Conversion from Lotus 2.2 to 3.0	30.00	40.00	½
Introduction to Lotus 1-2-3 (Rel. 2.2 or 3.0)	100.00	140.00	2
Advanced Lotus 1-2-3 (Rel. 2.2 or 3.0)	100.00	140.00	2
Spreadsheet Design and Documentation	50.00	70.00	1
Lotus 1-2-3 Macros	100.00	140.00	2
Introduction to Lotus 1-2-3 Databases	100.00	140.00	2
*Micro Database Concepts and Design	50.00	70.00	1
*Conversion from R:Base 2.11 to 3.1--Demonstration	FREE	FREE	¼
*Introduction to R:Base (Rel. 3.1)	125.00	175.00	2½
Intermediate R:Base (Rel. 3.1)	100.00	140.00	2
*Introduction to PFS:Professional File	50.00	70.00	1
*Freelance	50.00	70.00	1
*State Telephone Training	FREE	FREE	¼

* This class is not scheduled during the time covered in this issue.

Training Calendar

Data Network/Mainframe Classes

March 13	Introduction to TSO/SPF
April 1, 2, 3 & 4	Introduction to JCL
May 2	Orientation to the State Computer Center (free)
May 15, 16 & 17	Introduction to Culprit
May 23	Subscribing in Culprit (free)
May 28 & 29	Culprit Programming for IDMS

Microcomputer Classes

March 7	Fundamentals of DOS
March 25	Beginning Microcomputer Skills
April 8	Beginning Microcomputer Skills
May 3	Fundamentals of DOS
May 7	Beginning Microcomputer Skills

Word Processing Classes

March 5 & am March 6	Introduction to WordPerfect 5.0
March 14 & 15	Introduction to WordPerfect 5.1
April 5	WordPerfect Complex Document Design (free)
April 9 & 10	Introduction to WordPerfect 5.0
April 15 & 16	Advanced Features of WordPerfect 5.1
April 24 & 25	Introduction to WordPerfect 5.1
May 1 & 2	Introduction to WordPerfect 5.0
May 13 & 14	Introduction to WordPerfect 5.1
May 22 & 23	Advanced Features of WordPerfect 5.0

Spreadsheet Classes

March 8	Spreadsheet Design and Documentation
March 11 & 12	Introduction to Lotus 1-2-3, Rel. 2.2
March 18 & 19	Advanced Lotus 1-2-3, Rel. 2.2
April 11 & 12	Introduction to Lotus 1-2-3 Databases
April 17 & 18	Introduction to Lotus 1-2-3, Rel. 2.2
April 22 & 23	Introduction to Lotus 1-2-3, Rel. 3.0
May 9 & 10	Introduction to Lotus 1-2-3, Rel. 2.2
May 20 & 21	Lotus 1-2-3, Rel. 2.2 Macros

Database Classes

March 26 & 27	Intermediate R:Base
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Data Network/Mainframe Classes

ORIENTATION TO THE STATE'S COMPUTER CENTER: presented by the Application Services Bureau staff

DATE: May 2, 1991
TIME: 1:00 pm to 2:00 pm
PREREQUISITE: None
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This free class will provide an overview of the services available from the Information Services Division and will include a tour of the state's central computing facility in the Mitchell Building. Students will learn where to get help with their computing needs as well as the types of help and services available.

INTRODUCTION TO TSO/SPF: presented by Vince Burns of the Application Services Bureau

DATE: March 13, 1991
TIME: 8:30 am to 4:00 pm
PREREQUISITE: 3270nd (interactive class on terminal operation)
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

INTRODUCTION TO TSO/SPF is a hands-on workshop about using computer terminals (or PC terminal emulators) and the SPF editor. SPF is an easy-to-learn menu system used to enter data and programs into the State of Montana's central computer. Entering data, changing data and submitting programs (jobs) for execution will be covered in detail. SPF's utility functions and the tracking of job output will also be covered.

This course is essential for state government personnel using terminals or PCs linked to the State's central computer. It is a prerequisite for many other ISD classes.

INTRODUCTION TO JCL (JOB CONTROL LANGUAGE): presented by Jeff Holm of the Application Services Bureau

DATE: April 1 through 4, 1991
TIME: 8:30 am to 4:30 pm
PREREQUISITE: Introduction to TSO/SPF, a TSO logonid
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This course is designed for programmers, I/O controllers, operations technicians or users of report writing software who submit jobs on the state mainframe system. It will cover:

- Syntax and coding of IBM Job Control Language (JCL)
- MVS operating system
- How to handle datasets and device assignments
- Some of the IBM utilities
- Troubleshooting and interpreting system messages
- Hands-on experience writing and executing JCL

INTRODUCTION TO CULPRIT PROGRAMMING:

presented by Jeff Holm of the Application Services Bureau

DATE: May 15 through 17, 1991
TIME: 8:30 am to 4:30 pm
PREREQUISITE: Introduction to TSO/SPF; JCL and programming experience helpful
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This 3-day class will cover the basic functions of the CULPRIT report writer. It is directed toward end users and programmers. The class will cover the basic aspects of generating reports from standard files. It will not treat more advanced topics such as database access or match files. Topics covered will include:

- Generating a basic report from standard files
- Enhancing and formatting the report
- Generating multiple reports
- Sequencing report output
- Selective processing
- Understanding programming logic
- Performing arithmetic operations
- Directing processing flow
- Generating totals
- Generating subtotals and sort levels
- Printing selected output lines

SUBSCRIBING IN CULPRIT: presented by Vince Burns of the Application Services Bureau

DATE: May 23, 1991
TIME: 1:00 pm to 3:00 pm
PREREQUISITE: Introduction to Culprit Programming or Culprit programming experience
LOCATION: Basement of the Teachers Retirement Bldg. at 1600 6th Ave.

Here's a free class that will cover the subscribing capabilities of the Culprit programming language. In addition to learning to handle one-dimensional tables in Culprit, students will learn to redefine work fields in Culprit programs.

CULPRIT PROGRAMMING FOR IDMS: presented by Jeff Holm of the Application Services Bureau

DATE: May 28-29, 1991
TIME: 8:30 am to 4:30 pm
PREREQUISITE: Introduction to Culprit Programming or Culprit programming experience using sequential files; knowledge of IDMS database structure and access is recommended
LOCATION: Basement of the Teachers Retirement Bldg. at 1600 6th Ave.

This class will cover using the Culprit report writer to access an IDMS database. Instruction in database navigation will include using the PATH statement to allow Culprit to retrieve the records automatically and using DB-EXIT to code your own database record lookups. Other topics include checking of path-ids and IDMS status, use of key files to access the database, and tips on the most efficient way to navigate an IDMS database. If you do not have IDMS database experience, introductory materials on IDMS databases are available from Jeff Holm at 444-2072.

Microcomputer Classes

BEGINNING MICROCOMPUTER SKILLS: presented by The Computer School staff

DATES: March 21, 1991 or
April 8, 1991, or
May 7, 1991
TIME: 8:15 am to 4:30 pm
PREREQUISITE: None
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This course will give participants brief hands-on experience with microcomputers. It will cover the following topics:

- The machine
- The operating system
- Word processing
- Spreadsheets and graphics
- File Management
- Communications

All class time will be spent using microcomputers and software. This course helps develop a positive attitude toward using microcomputers and teaches their basic functions. It--or its equivalent--is a prerequisite for other microcomputer courses.

FUNDAMENTALS OF DOS: presented by The Computer School staff

DATES: March 7, 1991 or
May 3, 1991
TIME: 8:30 am to 4:30 pm
PREREQUISITE: Beginning Micro Skills and/or 3 months microcomputer experience
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

FUNDAMENTALS OF DOS is intended for microcomputer users who need to know more about controlling the microcomputer through its operating system. Programming experience is NOT required. Topics to be covered include:

- What is DOS? Why is it necessary to know about it?
- DOS names for peripherals
- File naming
- Set-up files such as CONFIG.SYS
- Internal DOS commands - DIR, ERASE, RENAME, TYPE, COPY and their variations
- External commands - FORMAT, SYS, DISKCOPY, CHKDSK, MODE
- Interpreting batch files
- Backup procedures

Word Processing Classes

INTRODUCTION TO WORDPERFECT 5.0: presented by The Computer School staff

DATES: March 5 and 6, 1991 or
April 9 and 10, 1991, or
May 1 and 2, 1991
TIMES: 8:30 am to 3:30 pm on first day
8:30 am to noon on second day
PREREQUISITE: Beginning Microcomputer Skills or equivalent
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class is designed for beginning users of WordPerfect 5.0. Experience with WordPerfect 4.2 is not necessary. The class will take the participants through the fundamentals of creating, printing, and editing documents. The new Setup feature will be discussed. Formatting documents as they are created and after creation will be covered. Some of the time saving features such as spell check, merges, block functions and macros will also be covered.

ADVANCED FEATURES OF WORDPERFECT 5.0: presented by The Computer School staff

DATE: May 22 and 23, 1991
TIMES: 8:30 am to 3:30 pm on first day
8:30 am to noon on second day
PREREQUISITE: Introduction to WordPerfect 5.0 or equivalent
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

For those already using WordPerfect 5.0, the advanced class will cover footnotes, column generation, sorting capabilities, dual document editing, changing fonts within a document, creating style sheets and master documents, keyboard layout, compose function, and graphics.

INTRODUCTION TO WORDPERFECT 5.1: presented by The Computer School staff

DATES: March 14 and 15, 1991 or
April 24 and 25, 1991, or
May 13 and 14, 1991
TIMES: 8:30 am to 3:30 pm on first day
8:30 am to noon on second day
PREREQUISITE: Beginning Microcomputer Skills or equivalent
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class is designed for those users new to WordPerfect. This class will lead participants through the basics--creating, editing and printing documents. Some advanced features--formatting, spell check, block functions and others--will also be covered.

ADVANCED FEATURES OF WORDPERFECT 5.1: presented by The Computer School staff

DATE: April 15 and 16, 1991
TIMES: 8:30 am to 3:30 pm on first day
8:30 am to noon on second day
PREREQUISITE: Introduction to WordPerfect 5.1
LOCATION: Basement of the Teachers Retirement Bldg at 1500 6th Ave.

This class is geared for those who are proficient in the basics of WordPerfect 5.1. Topics include footnotes, text columns, sorting, style sheets, master documents, keyboard layout, graphics, table formats, advanced merging and generation of labels.

WORDPERFECT COMPLEX DOCUMENT DESIGN: presented by Kyle Wynn of the Application Services Bureau

DATE: April 5
TIME: 2:00 pm to 4:00 pm
PREREQUISITE: Introduction to WordPerfect 5.0/5.1
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This "hands-on", free class will cover Master and Subdocument design. Using WordPerfect's Master Document feature allows creation of larger or more complex documents while providing a more manageable and editable document. Examples are documents or reports containing several chapters or requiring indices, tables of contents, outlining, or footnotes. The demonstration will highlight WordPerfect features that make combining several subdocuments within a master document easy. Students will learn how to build and expand a master document that includes a table of contents, footnotes, and an index.

Spreadsheet Classes

INTRODUCTION TO LOTUS 1-2-3, RELEASE 2.2: presented by The Computer School staff

DATES: March 11 and 12, 1991 or
April 17 and 18, 1991, or
May 9 and 10, 1991
TIME: 8:30 am to 4:30 pm each day
PREREQUISITE: Beginning Microcomputer Skills or equivalent
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class is designed for persons with little or no Lotus 1-2-3 experience. It will consist of instructions and hands-on practice, with lab time available for building spreadsheets of the participants' choosing. The class will concentrate on using 1-2-3 Release 2.2 to design, create, edit and print spreadsheets and to create graphics. Some intermediate features such as the Allways Add-In product will be used to teach enhanced printing spreadsheets and graphs.

SPREADSHEET DESIGN AND DOCUMENTATION:

presented by Randy Pugh of the Application Services Bureau

DATE: March 8, 1991
TIME: 8:30 am to 4:30 pm
PREREQUISITE: Introduction to Lotus 1-2-3
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class will emphasize the importance, effectiveness and the organizational benefits of good spreadsheet design and documentation. Lotus 1-2-3 Release 2.2 will be used to demonstrate good and bad techniques. The class will cover some methods for locating some of the more common mistakes and logic problems.

ADVANCED FEATURES OF LOTUS 1-2-3, RELEASE 2.2:

presented by The Computer School staff

DATE: March 18 and 19, 1991
TIME: 8:30 am to 4:30 pm each day
PREREQUISITE: Introduction to Lotus 1-2-3
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This course consists of lecture, hands-on practice, lab work and a question and answer period. It is designed for anyone who is using Lotus 1-2-3 to create spreadsheets for all but the simplest applications. Advanced features include:

- File linking and multiple worksheet consolidation
- The @ functions
- Use of dates and times within 1-2-3
- Hiding and/or protection of spreadsheet ranges
- Advanced global settings
- Setting sheets and improved graph appearance

The class will also cover demonstrations of Lotus 1-2-3's database and Macro functions and many other features not included in Introduction to Lotus 1-2-3.

LOTUS 1-2-3 MACROS, RELEASE 2.2:

presented by the Irvin Vavruska of the Application Services Bureau

DATE: May 20 and 21, 1991
TIME: 8:30 am to 4:30 pm each day
PREREQUISITE: Beginning and Advanced Lotus 1-2-3 Release 2.2
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class is designed for those who want to learn about Lotus 1-2-3 macros. It will concentrate on using 1-2-3 Release 2.2 to design, create, and edit macros to perform simple operations or redundant tasks. Material covered will include writing and debugging macros, using the keystroke recorder, and using advanced macro commands.

Class will consist of instruction, demonstrations, and hands-on practice with lab time available to build spreadsheets of participant's choosing.

INTRODUCTION TO LOTUS 1-2-3 RELEASE 3.0:

presented by The Computer School staff

DATE: April 22 and 23, 1991
TIME: 8:30 am to 4:30 pm each day
PREREQUISITE: Beginning Microcomputer Skills
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class is designed for persons with little or no Lotus 1-2-3 experience. It will consist of instructions and hands-on practice, with lab time available for building spreadsheets of the participants' choosing.

The class will cover design, creation, printing and editing of 3-dimensional spreadsheets. Additional topics will include selected graphic features, the use of formulae to connect spreadsheets, multiple spreadsheets within a single file, and the opening of multiple files at the same time.

INTRODUCTION TO LOTUS 1-2-3 DATABASE FEATURES:

presented by Randy Pugh of the
Application Services Bureau

DATE: April 11 and 12, 1991
TIME: 8:30 am to 4:30 pm each day
PREREQUISITE: Completion of Beginning Lotus 1-2-3 class and six months of regular lotus usage (at least three times a week).
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class covers the most frequently used database and database support options within Lotus 1-2-3. Create, Query, and Extract are the primary functions covered with strong emphasis on the design and use of the selection Criteria. Also covered are the @DSUM, @DAVG, and @DCOUNT functions as an alternate way to extract summaries from the database. Database support options covered are the Data Fill, Data Sort, and the Data Distribution selections.

Presentation Method: Instructor assisted, self paced learning modules with self graded quizzes. Practical exercises are interspersed between some modules.

Database Classes

INTERMEDIATE R:BASE:

presented by Jeff Holm of the Application Services Bureau

DATE: March 26 and 27, 1991
TIME: 8:30 am to 4:30 pm
PREREQUISITE: Introduction to R:Base
LOCATION: Basement of the Teachers Retirement Bldg. at 1500 6th Ave.

This class will expand on topics covered in "Introduction to R:Base." Topics will include sophisticated forms and reports, multi-table operations, database maintenance, and R:base commands and functions. An overview of custom code and macros will be given to demonstrate the programming capabilities of R:Base, but emphasis will be on enhancements to Application Express rather than "programming from scratch."

ISD CLASS ENROLLMENT APPLICATION
COMPLETE THIS APPLICATION IN FULL AND
RETURN IT TO THE INFORMATION CENTER BUREAU
PRIOR TO THE FIRST DAY OF CLASS

COURSE DATA

Course Requested: _____

Date Offered: _____

STUDENT DATA

Name: _____

Soc Sec Nbr (for P/P/P): _____

Agency & Division: _____

Mailing Address: _____

Phone: _____

How have you met the required prerequisites for this course? Explain giving the class(es) taken, Information Center tutorial(s) completed, and/or experience.

BILLING INFORMATION/AUTHORIZATION

Are you an ISD subscribing agency: _____

ISD Billing Number (5 digits): _____

Authorized Signature: _____

**FULL CLASS FEE WILL BE BILLED TO THE REGISTRANT UNLESS
CANCELLATIONS ARE MADE THREE DAYS BEFORE THE START OF EACH CLASS.**

DEPARTMENT OF ADMINISTRATION
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